



# National Weather Service

## Storm Data and Unusual Weather Phenomena



July 2005

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed Injured	Estimated Damage Property Crops	Character of Storm
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### IOWA, Central

<b>Emmet County</b>							
Estherville	03	0533CST			0 0	3K 5K	Hail(0.88)
<b>Emmet County</b>							
3 N Wallingford	03	0536CST			0 0	2K 5K	Hail(0.88)
<b>Emmet County</b>							
5 E Wallingford	03	0543CST			0 0	2K 5K	Hail(0.88)
<b>Kossuth County</b>							
1 N Algona	03	0723CST			0 0	2K 5K	Hail(0.88)
<b>Kossuth County</b>							
6 NE Algona	03	0730CST			0 0	2K 5K	Hail(0.88)
<b>Winnebago County</b>							
Scarville	03	0730CST			0 0	3K 5K	Hail(0.88)
<b>Bremer County</b>							
4 N Waverly Muni Arpt	03	1010CST			0 0	2K 5K	Hail(0.88)

A line of thunderstorms developed over Minnesota during the early morning hours of the 3rd. The southwest edge of the line continued to develop southwestward during the overnight hours with the tail of the line expanding into northern Iowa. The storms were elevated, fed by a 40 kt low level jet. Lifted indices were near -5 around sunrise with CAPE values in the 1000 to 1500 J/kg range. The sounding exhibited a good veering hodograph. The freezing level was around 14,000 feet, which limited the hail size in spite of the fact that much of the realizable CAPE was in the -10 to -30 C. portion of the sounding. As the line moved through, hail was reported with several of the cells north of U.S. Highway 20. The hail size was generally around nickel size. For the most part, the storms weakened during the early morning. One storm did hold together and produced nickel size hail north of Waverly in Bremer County during the late morning.

### **Cerro Gordo County**

4 NE Rock Falls	03	1735CST	0.1	25	0	0	1K	Tornado (F0)
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Tornado touched down briefly in open field

Thunderstorms formed along a cold front as it moved southeast into Iowa. Convection earlier in the day and considerable cloudiness through the day limited heating of the atmosphere. In spite of that, temperatures warmed into the low 80s with dew point readings in the upper 60s to low 70s common. This produced a marginally unstable atmosphere with lifted indices in the -4 to -5 C. range and CAPE values in the 1500 to 2000 J/kg range. One of the thunderstorms became severe in Cerro Gordo County and produced a brief tornado touchdown in open areas northeast of Rock Falls

### **Warren County**

Milo	04	0500CST			0	0	3K	5K	Hail(0.88)
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A cold front sank southeast across the state very slowly during the early morning hours. In the vicinity of the front, very moist air was in place with dew points remaining in the low to mid 70s well into the night. It was a marginal event with elevated convection taking place just north of the front. Lifted indices were in the -1 to -3 C. range, however freezing levels were lower than in the recent past. Freezing levels were in the 12,000 to 13,000 foot range. A weak low level jet of 25 to 35 knots set up at an acute angle to the frontal boundary. Thunderstorms developed in southwest Iowa and spread into the central counties. One of the storms became severe and dropped nickel size hail in Warren County at Milo.

### **Cerro Gordo County**

Clear Lake	17	2030CST			0	0	5K		Thunderstorm Wind (EG50)
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### IOWA, Central

#### Winnebago County

1 N Leland	17	2030CST			0	0	2K	25K	Thunderstorm Wind (EG61)
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#### Guthrie County

2 E Stuart	17	2230CST			0	0	5K		Thunderstorm Wind (EG52)
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#### Dallas County

2 SW Waukee	17	2247CST			0	0	2K		Thunderstorm Wind (MG59)
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A hot and unstable airmass was in place over Iowa during the afternoon of the 17th. A cold front moved in from the northwest as an unseasonably strong upper level short wave moved across the northern U.S. Afternoon temperatures in western and central Iowa reached the mid to upper 90s with surface dew points in the upper 60s to low 70s. Initially the airmass was capped with 700 mb temperatures above +15 C, which limited convection. By early evening, some cooling began to move in aloft. Temperatures at 700 mb fell to +12 and thunderstorms began to develop along the cold front. By that time CAPE values were in the 3500 to 4000 J/kg range with lifted indices near -9 C. Hail was limited with the freezing level around 15,500 feet. A line of thunderstorms developed and moved east across the state. Many of the storms produced winds of 45 to 55 MPH and some small hail. As the storms moved through central Iowa, a 68 MPH wind gust occurred west of Des Moines near Waukee, though damage was minor. Over north central Iowa, a corn field was totally flattened by high winds north of Leland, and 18 inch diameter trees were toppled in Clear Lake

#### Taylor County

8 WSW Bedford Arpt	21	0130CST			0	0	5K		Hail(0.75)
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#### Guthrie County

2 E Stuart	21	0230CST			0	0	2K		Thunderstorm Wind (EG52)
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#### Adair County

1 N Greenfield	21	0240CST			0	0	15K		Thunderstorm Wind (EG50)
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#### Jasper County

Newton	21	0400CST			0	0	5K		Thunderstorm Wind (EG50)
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A weak frontal boundary sagged south into the state during the evening of the 20th. The airmass was very unstable during the afternoon of the 20th with temperatures warming in to the mid 90s and dew point readings in the mid to upper 70s. There was significant capping in place with a 700 mb temperature of +17 C. at Omaha by 00 UTC/21. Lifted indices were around -8 C. with CAPE values around 2500 J/kg. Hail was limited with the storms as the freezing level was around 15,500 feet. A cluster of thunderstorms formed during the evening over south central South Dakota. Thunderstorms were able to break through the +19 C. cap in place at North Platte as surface temperatures to the south of the boundary warmed above 110 F. in places. As the cluster moved east, it became more elevated in nature and also took on a bow echo configuration. The system moved across Iowa at around 45 MPH. Numerous

reports of 50 MPH winds were received as the line passed and a few reports of winds around 60 MPH. Trees were downed by the high winds. One report of three quarter inch diameter hail was received from Taylor County.

#### Sac County

3 SE Wall Lake	24	1720CST			0	0	5K		Hail(0.75)
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#### Carroll County

4 W Breda	24	1724CST			0	0	5K		Hail(0.75)
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#### Carroll County

5 W Breda	24	1726CST			0	0	5K	10K	Hail(2.00)
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#### Hamilton County

Webster City Arpt	24	1738CST			0	0	2K	5K	Thunderstorm Wind (MG61)
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### IOWA, Central

#### **Crawford County**

7 NE Deloit	24	1805CST	0.5	50	0	0	1K	5K	Tornado (F0)
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Tornado touched down in a corn field and cut a path across the field

#### **Crawford County**

5 NE Deloit to 3 NNE Deloit	24	1810CST 1830CST			0	0	10K	100K	Hail(2.00)
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#### **Crawford County**

5 NE Deloit	24	1810CST			0	0	5K	5K	Thunderstorm Wind (EG61)
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#### **Bremer County**

4 N Waverly Muni Arpt	24	1835CST			0	0		5K	Hail(0.75)
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#### **Bremer County**

Waverly	24	1847CST			0	0		5K	Hail(0.75)
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#### **Bremer County**

Waverly	24	1930CST			0	0	5K		Thunderstorm Wind (EG61)
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#### **Black Hawk County**

Waterloo	24	1935CST			0	0	5K		Thunderstorm Wind (EG52)
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#### **Black Hawk County**

Waterloo	24	1938CST			0	0	5K		Thunderstorm Wind (MG51)
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A very warm and and unstable airmass was on place over Iowa on the evening of the 24th, and had been for several days. The airmass was relatively capped with 700 mb temperatures around +12 C. Surface temperatures warmed into the mid 90s in most areas with dew point readings in the mid to upper 70s. The lifted index was around -6 C by the early evening hours. There was a decent amount of CAPE with values running around 3000 J/kg, however with the cap in place it was difficult to realize the CAPE. The freezing level was quite high, reported at 16,400 feet. A cold front sagged southeast into the state during the day. This front, in combination with a weak upper level system, was enough to generate vigorous convection over northern Iowa. There were several reports of high winds, with numerous trees and power lines downed. A microburst hit the Webster City Airport with a 70 MPH wind gust. The microburst dropped dew points into the mid 50s, which lasted for several hours. Reports of hail were spotty and generally in the three quarter inch diameter range. Two storms were exceptionally strong and dropped 2 inch diameter hail. One occurred west of Breda in Carroll County. The second was in Crawford northeast of Deloit. The hail lasted for about 20 minutes as the storm moved very slowly southwest, cutting a swath nearly two miles wide with the ground becoming white for a period of time. This storm also produced a tornado northeast of Deloit. The tornado touched down in a corn field and cut a swath across the field.

#### **Emmet County**

Armstrong	25	0030CST			0	0	3K		Thunderstorm Wind (EG52)
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A line of thunderstorms developed ahead of an approaching cold front to the northwest of Iowa. The storms weakened as the moved into Iowa. One of the storms remained severe as it moved into Emmet County, causing considerable tree damage in the city of Armstrong.

#### **Crawford County**

2 SE Vail	25	1715CST			0	0	2K	5K	Hail(1.00)
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#### **Crawford County**

Manilla	25	1740CST			0	0	5K		Thunderstorm Wind (EG50)
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#### **Crawford County**

2 N Aspinwall	25	1750CST			0	0	5K	2K	Thunderstorm Wind (EG65)
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#### **Crawford County**

5 E Manilla	25	1750CST			0	0	2K		Thunderstorm Wind (EG52)
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### IOWA, Central

Carroll County Carroll	25	1755CST			0	0	5K		Thunderstorm Wind (EG52)
Carroll County Manning	25	1755CST			0	0	2K		Thunderstorm Wind (EG50)
Audubon County 4 W Gray	25	1800CST			0	0	1K		Thunderstorm Wind (EG52)
Kossuth County 6 SSW Algona to 5 SSW Algona	25	1802CST 1804CST	1	40	0	0	30K	2K	Tornado (F0)
Tornado touched down in field, then tracked across field hitting a 60 X 90 foot shed. The shed was 2 years old and was damaged									
Webster County 5 NNW Ft Dodge	25	1807CST			0	0	2K	1K	Thunderstorm Wind (EG52)
Carroll County 4 E Glidden	25	1810CST			0	0	2K	1K	Thunderstorm Wind (EG50)
Crawford County 5 E Manilla	25	1820CST			0	0	2K	1K	Thunderstorm Wind (EG60)
Greene County 10 SSW Scranton	25	1820CST			0	0	2K		Thunderstorm Wind (EG52)
Humboldt County Humboldt	25	1825CST			0	0	2K		Thunderstorm Wind (EG50)
Hamilton County 6 SSW Webster City	25	1855CST			0	0	2K	1K	Thunderstorm Wind (EG50)
Franklin County 4 S Sheffield	25	1917CST			0	0	2K	5K	Thunderstorm Wind (EG52)

A very warm and unstable airmass was in place over Iowa, as had been the case for the past several days. A cold front sank southeast into the state during the afternoon and evening hours. The freezing level was very high, ranging from 15,500 to 17,000 feet across the area. The lifted indices were in the -8 range by late afternoon. There was considerable cloud debris over the northern part of the CWA, however clearing set in across the south. Temperatures soared into the mid 90s with dew point readings in the low to mid 70s. Plenty of CAPE was available with values by late afternoon in the 3500 to 4000 J/kg range. Thunderstorms fired along the front and became severe. The storms did not remain severe for very long as in spite of the linear presentation on radar, the storms became multi-cellular. The cloud shield and outflow from the storms diminished their intensity within 90 minutes of the storms becoming severe. During the early stages of the line, a tornado dropped down into Kossuth County south of Algona. The tornado tracked across a corn field and hit a two year old shed. The shed was 60 X 90 feet and was damaged significantly. The farmhouse was damaged with siding pulled off of it, however it was not directly struck. There were numerous reports of high winds of 60 up to 75 MPH across the west central into the north central counties. Numerous trees were damaged or toppled and some crop damage was reported. One of the stronger storms produced winds high enough to topple 3 power poles north of Aspinwall in Crawford County. Hail from the storms was quite limited, though spotty reports of up to dime size hail were received. One storm did produce quarter size hail in Crawford southeast of Vail during the initial stages of the storm development.

IAZ005-017-023>027-033>039-045>049-058>059 Kossuth - Cerro Gordo - Pocahontas - Humboldt - Wright - Franklin - Butler - Sac - Calhoun - Webster - Hamilton - Hardin - Grundy - Black Hawk - Carroll - Greene - Boone - Story - Marshall - Guthrie - Dallas

26 2100CST  
31 2359CST  
0 0 210K 630K Flood

July began with very dry weather. An average of only .36 inches of rain fell over the first 17 days of the month. This was about 2



Location	Date	Time Local/Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons		Estimated Damage		Character of Storm
					Killed	Injured	Property	Crops	

**IOWA, Central**

inches less than normal. Rainfall averaged about an inch more than normal during the final two weeks of July. Rainfall total s around the state ranged from .74 inches in Maquoketa, their lowest July total since 1946, to 9.75 inches in northern Winneshiek County at Bluffton. The heavy rainfall caused rivers to rise across the state. During the first few episodes of rainfall, only moderate within bank rises occurred. As rainfall continued, flooding began with many areas of the north half of Iowa reporting flooding. Much of the flooding was of agricultural lands. Damage was overall fairly mild across the state

**Story County  
Nevada**

31	1000CST	0	0	5K	Lightning
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Thunderstorms moved through Story County during the morning of the 31st. A house was struck in Nevada causing damage to the roof and a small fire inside of one of the interior walls.